OIPE IAP25
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PATENT & TRADEMARK OFFICE

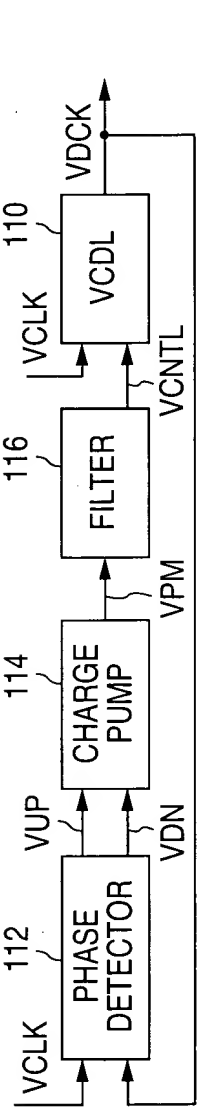

FIG. 1
(PRIOR ART)

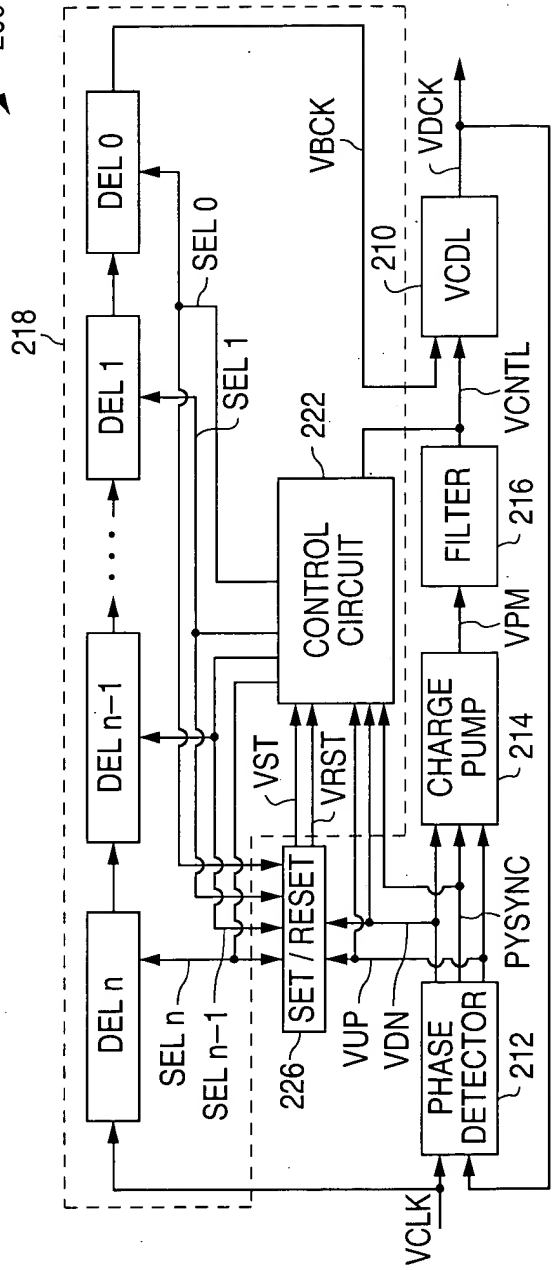

FIG. 2

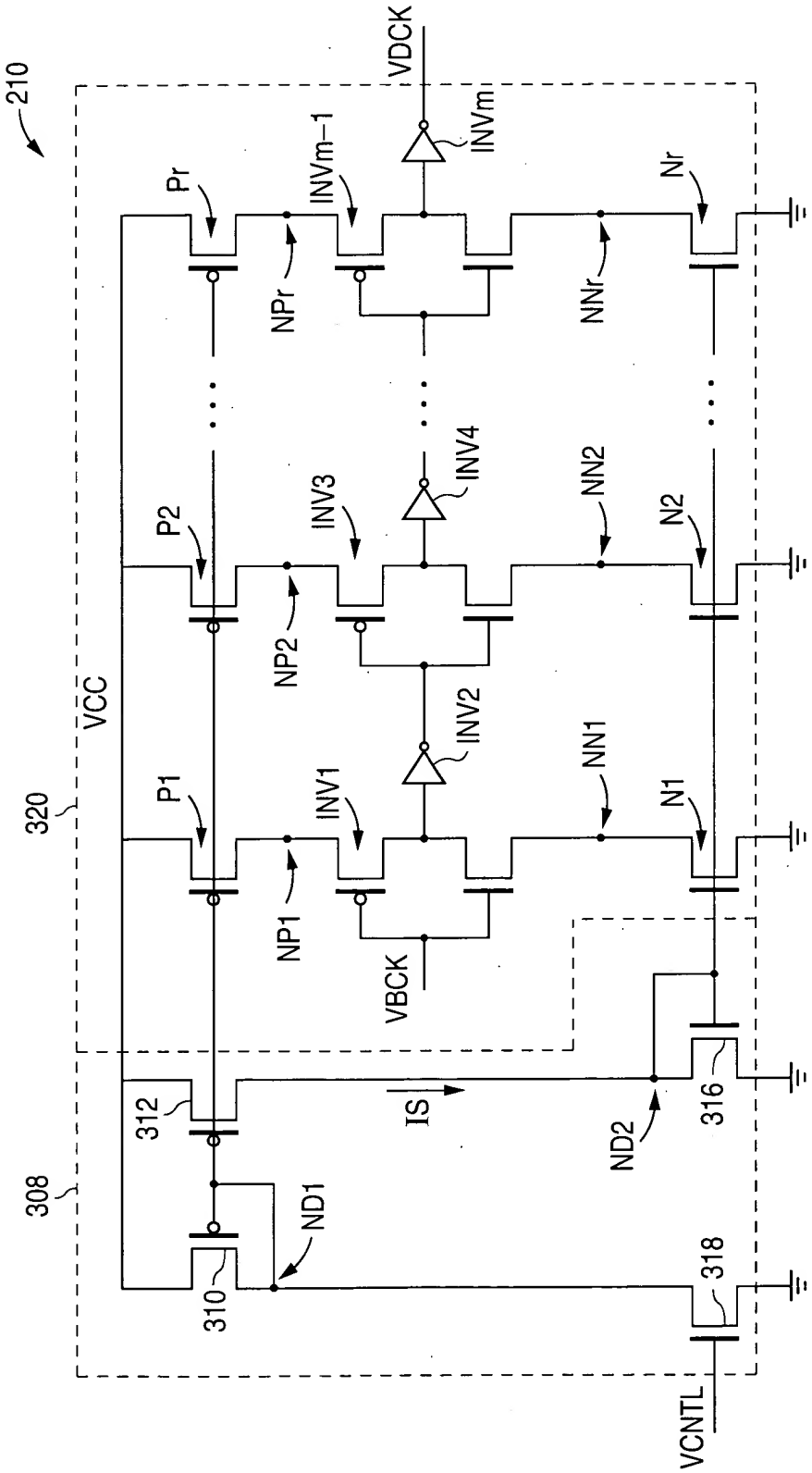
210
VDCK
INVm
INVm−1
Pr
NPr
Nr
NNr
INV4
INV3
P2
NP2
NN2
N2
INV2
INV1
P1
NP1
NN1
N1
VBCK
320
VCC
312
IS
ND2
316
308
ND1
310
318
VCNTL

FIG. 3

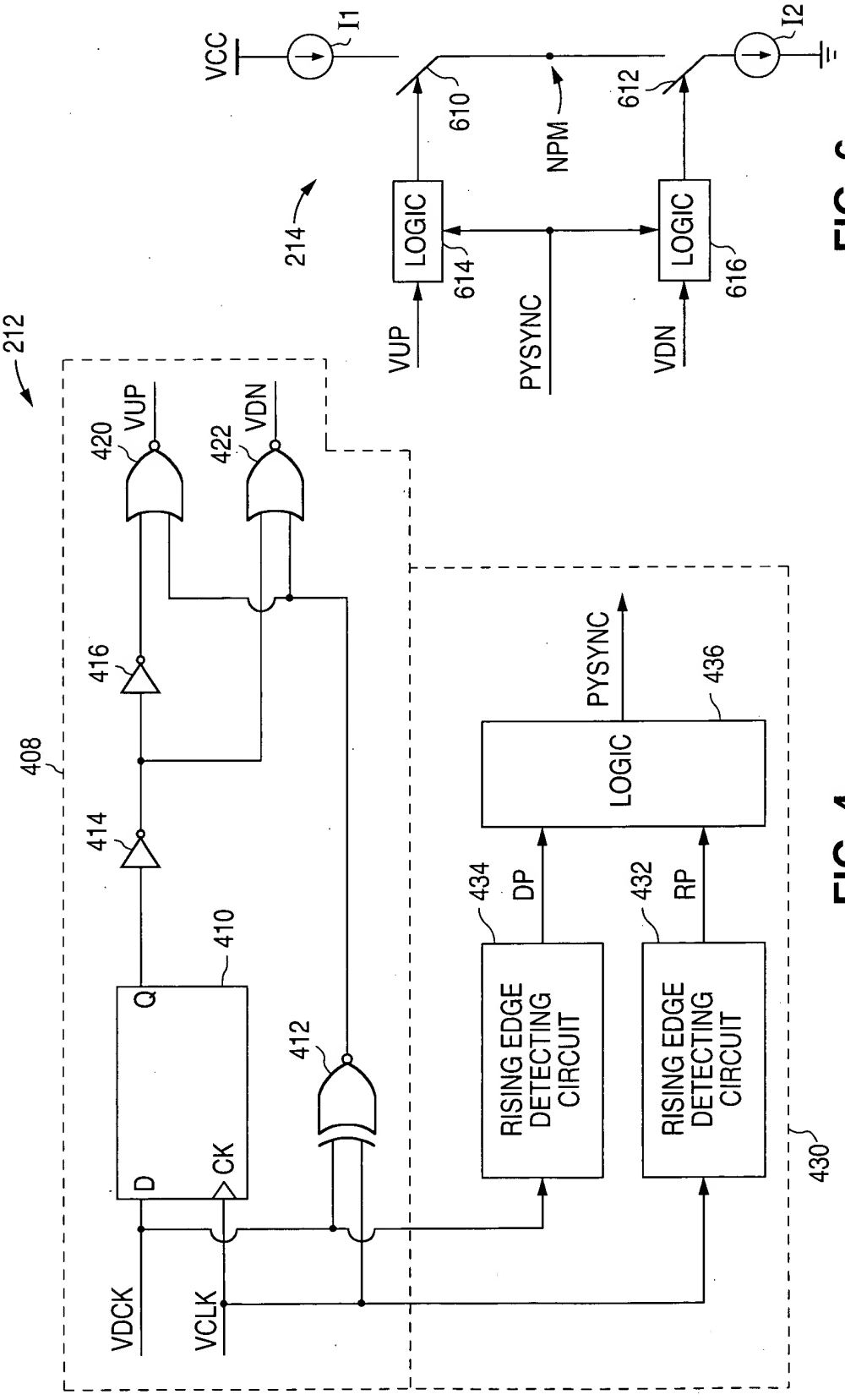
VCC
I1
I2
610
612
NPM
214
LOGIC
614
LOGIC
616
VUP
PYSYNC
VDN
212
420
VUP
422
VDN
416
414
408
410
Q
D
CK
412
VDCK
VCLK
PYSYNC
436
LOGIC
434
DP
432
RP
RISING EDGE DETECTING CIRCUIT
RISING EDGE DETECTING CIRCUIT
430

FIG. 6

FIG. 4

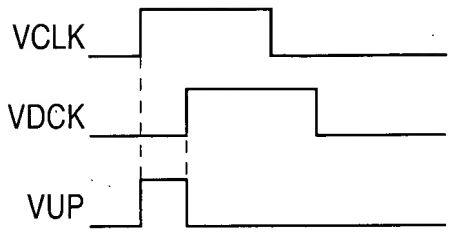

FIG. 5A

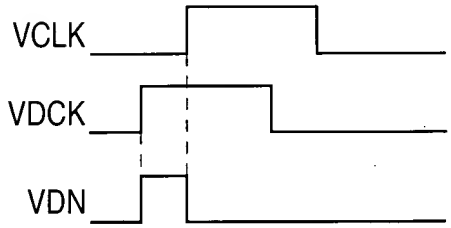

FIG. 5B

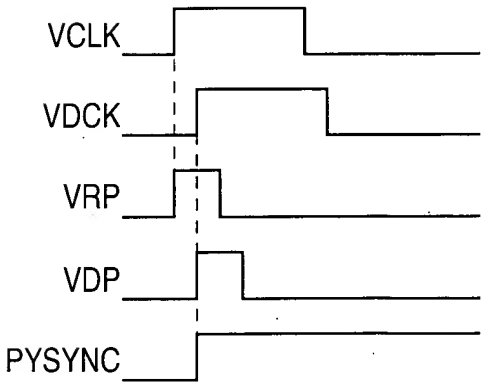

FIG. 5C

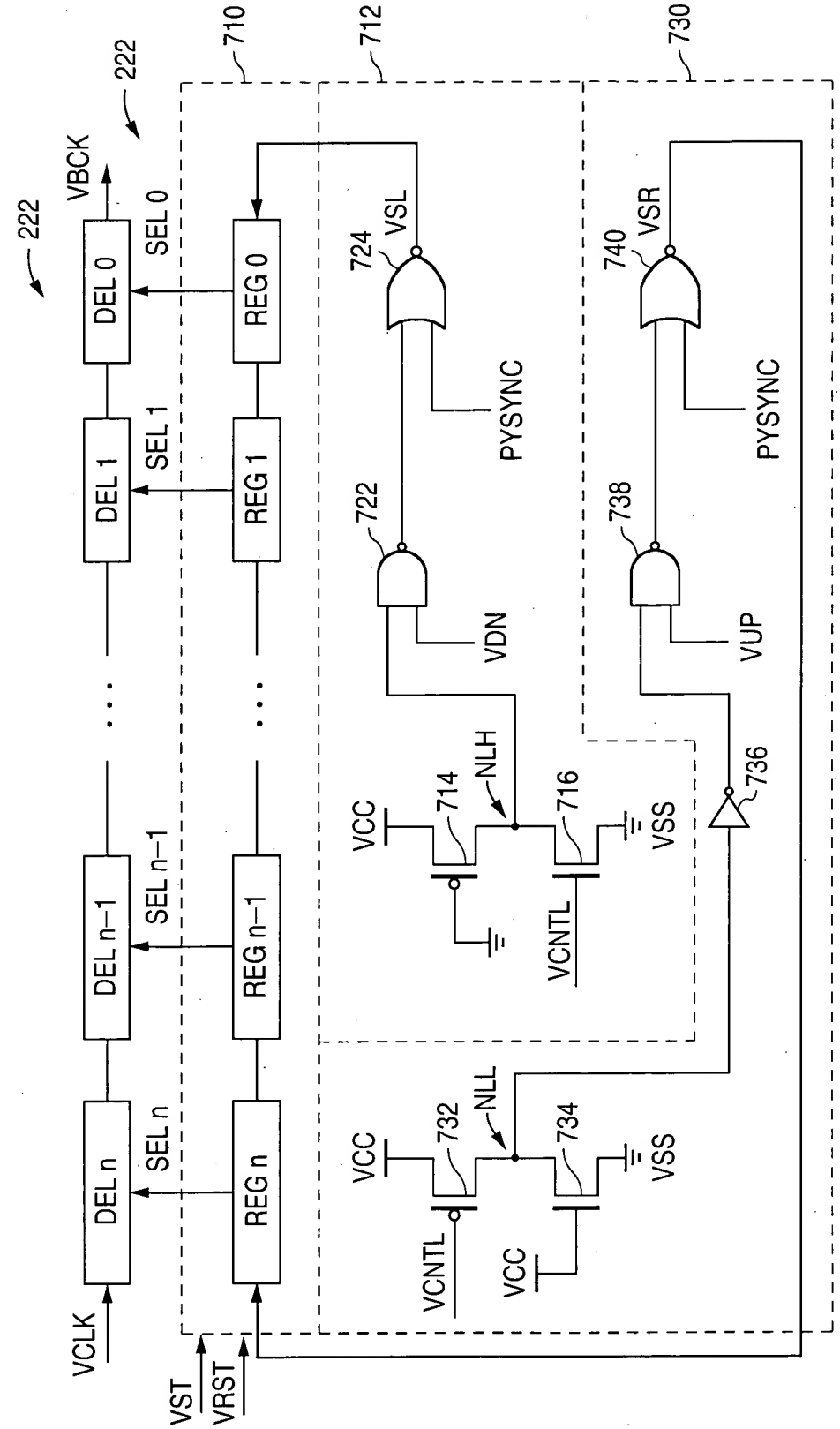
222
VBCK
222
710
712
730
DEL 0
SEL 0
REG 0
DEL 1
SEL 1
REG 1
DEL n−1
SEL n−1
REG n−1
DEL n
SEL n
REG n
724
VSL
PYSYNC
722
VDN
740
VSR
PYSYNC
738
VUP
VCC
714
NLH
716
VSS
VCNTL
736
VCC
732
NLL
734
VSS
VCNTL
VCC
VCLK
VST
VRST

FIG. 7